

Pediatric Urology Service Ramps Up Robotic Surgery Program

ROBOT ENABLES SOME OPERATIONS TO BE LESS PAINFUL, MORE PRECISE

When a 7-year-old boy visited the Pediatric Urology Clinic at Lucile Packard Children's Hospital last year, his family worried that he might lose one of his kidneys. The child had a very large renal cyst, and another hospital had told his family the entire organ would need to be removed.

With the help of a robot, pediatric urologist Michael Hsieh removed just the cyst. "The kidney is completely preserved," said Hsieh, MD, PhD, director of the Minimally Invasive Surgery Program in the Pediatric Urology Service at Packard Children's. "The patient went home the next day."

Hsieh specializes in robotic surgery, a procedure in which the physician remotely controls a robot to perform operations. Compared with open surgery, robotic surgeries generally require smaller incisions and leave smaller scars. They also tend to result in less bleeding, less post-operative pain and shorter recovery times.

Traditional laparoscopic surgery shares these advantages, but the instruments usually lack joints that articulate the way human arms and hands do, making certain tasks very difficult. Robotic surgery offers jointed instruments that allow more precise movements, as well as the binocular 3D vision and depth perception that a physician would have during open surgery.

"Robotic surgery takes some of the best of open and traditional laparoscopic surgery," Hsieh said.

The robot at Packard Children's, named Gizmo, is the latest model of the da Vinci Surgical System. It consists of a console where the surgeon sits, a patient cart with four mounted robotic arms, and electronics for the robot camera. The surgeon operates through three or four small incisions, manipulating the robotic arms through the console and viewing the surgery on a high-definition screen with 10X magnification.

Packard Children's has one of the most substantial pediatric robotics programs on the West Coast. Hsieh performs many types of operations using robotic surgery, including pyeloplasty, a repair to relieve ureteropelvic junction obstruction; ureteral reimplantation to treat urinary reflux; removing renal cysts; and removing part or all of the kidney for patients with tumors or infections. He also performs urinary tract reconstructions to treat bladder dysfunction associated with spinal cord injuries or spina bifida.

The Pediatric Urology Service offers other benefits as well. Three certified pediatric nurse practitioners are available to help train children with voiding dysfunctions, a time-intensive process. A fluorourodynamics unit—not commonly available at many institutions—can measure urinary flow and pressure through the bladder and urethra, enabling more accurate diagnoses. An ongoing clinical trial is investigating whether parent-guided hypnosis can help children get through a procedure called a voiding cystourethrogram with less stress and discomfort. The clinic treats a wide range of conditions, including hypospadias, a malformation in which the male urethral opening is incorrectly placed; undescended testes; hernias and hydroceles; tumors; urinary reflux; congenital defects and obstruction of the urinary tract; and more common problems such as incontinence and recurrent urinary tract infections.

Hsieh is also working with other researchers in the San Francisco Bay Area to develop robotic surgery-related technologies that improve operating room safety using the Microsoft Kinect. Meanwhile, pediatric urology fellows and residents are being trained in robotic surgery using a virtual reality simulator.

"It's another example of Packard leading the way," Hsieh said.

For more information about the Pediatric Urology Service at Packard Children's, visit <http://urology.lpch.org>. To refer a patient, call (650) 497-8156.

